

Abstract

Compositions and methods for treating textile substrates to obtain superior liquid repellent properties are disclosed. Durable microscopic surface structures imparted to the fibrous substrate allow liquids to bead up and roll off of its surface. Mechanical abrasion or sanding techniques may be used to create the microscopic surface structures on the surface of a fibrous textile substrate, without substantially breaking fibers, followed by a chemical treatment using, for example, fluorocarbon-containing repellent compositions. Particles may be employed in combination with repellent compositions to achieve superior repellent properties. A property of the roughened surface fibers, the Roughness Factor, is used to characterize the microscopic surface structures on the treated textile surface. Treated textile substrates are disclosed which achieve superior water and oil repellency, even after multiple abrasion or laundering cycles.